Dkt. 2271/74323

Tsuneo MAKI et al., S.N. 10/532,852 Page 2

Amendments to the Specification

Please amend the paragraph at page 1, lines 7-11, in the following manner:

The present This disclosure generally relates to image forming apparatuses and, more particularly, to an image forming apparatus using a belt conveyance apparatus provided with a drive roller, a driven roller and an endless belt engaged with the drive roller and the driven roller.

Please amend the paragraphs at page 4, line 11, to page 5, line 13, in the following manner:

DISCLOSURE OF THE INVENTION SUMMARY

It is a general object of the present invention to provide an improved and useful belt convoyance apparatus and image forming apparatus in which the above mentioned problems are eliminated.

A more specific object of the present invention is to provide In an aspect of this disclosure, there is provided a belt conveyance apparatus used for an image forming apparatus in which a driven roller engaged with a conveyance belt can move in an axial direction so that a deflection of the conveyance belt can be corrected by the movement of the driven roller.

In order to achieve the above mentioned objects, there is provided according to one aspect of the present invention addition, there is provided a belt conveyance apparatus comprising: a drive roller; a driven roller rotating in accordance with an operation of the drive roller; a conveyance belt engaged with the drive roller for rotationally driving the conveyance belt and the driven roller, the conveyance belt being provided with a bead formed on an inner side thereof; and driven roller support means for movably supporting the driven roller in a thrust direction, wherein, in operation, ends of the drive roller and the driven roller interface with the bead of the conveyance belt so as to restrict a deflection of the conveyance belt in the thrust direction against a deflection of the conveyance belt.

Dkt. 2271/74323

Tsuneo MAKI et al., S.N. 10/532,852 Page 3

Please amend the paragraph at page 9, lines 18-21, in the following manner:

Other objects <u>aspects</u>, features and advantages of the present invention will become more apparent from the following detailed description when read in conjunction with the accompanying drawings.

Please amend the paragraph at page 14, line 20 through page 15, line 12, in the following manner:

The image information acquired by reading a document sheet by the scanner 121 is output as image data to the main control part. The main control part causes the input image data to be written on a photo-conductor drum 202 that constitute an image forming part 201 (corresponding to "image forming means") by an optical system 200 so as to form an electrostatic latent image on the photo-conductor drum 202. Then, the main control part causes a charge part 203, an exposure part 204 and a development part 205, which together constitute the image forming part 201, to form a visible toner image on the photo-conductor drum 202. The visible toner image is further transferred onto an intermediate transfer belt 102, which is engaged with an intermediate transfer belt drive roller 101 and an intermediate transfer belt driven roller [[102]] 103, in an intermediate transfer part 10t) that constitutes the image forming part 201.

Please amend the paragraphs at page 16, line 13, to page 18, line 3, in the following manner:

The ADF 3 comprises a paper separation/supply part 5, a carry in/out part 6 and [[an]] a paper eject part 7. The paper separation/supply part 5 separates document sheets of a bundle of document placed on the document tray 4, one by one, and, thereafter, conveys each separated document sheet toward the contact glass 2. The carry in/out part 6 conveys each document sheet conveyed to the contact

Dkt. 2271/74323

Tsuneo MAKI et al., S.N. 10/532,852 Page 4

glass 2 by the paper separation/supply part 5 and stops at an exposure position (corresponding to the "reading position"), and conveys each document sheet, of which a reading operation has been completed, out of the contact glass 2. The paper eject part 7 ejects each document sheet, which is conveyed out of the exposure position by the carry in/out part 6, to one of the first paper eject tray 8 protruding from a side of the digital copy machine 1 and the second paper eject tray located under the document tray 4. It should be noted that, in the paper separation/supply part 5, a bundle of document sheet is placed on the document sheet so that an image on each document sheet to be read faces upward. A pickup roller 10 is provided for taking a document sheet on a top of the bundle P of document sheets by contacting to and separating from the bundle P of the document sheets by being swung by a swing mechanism (not shown in the figure). A paper supply belt 11 and a separation roller 12 together separate the document sheets taken by the pickup roller 10 one by one, and convey only an uppermost document sheet to a pair of pull-out rollers. Additionally, in the carry in/out [[par]] part 6, a conveyance belt 65, which is an endless belt wound on both a conveyance belt drive roller 66 and a conveyance belt driven roller 67, is circulated by being driven by the conveyance belt drive roller 66 so as to convey the document sheet on the contact glass 2.

FIG. 3 shows a side view of the intermediate transfer part 100. FIG. 4 is a plan view of the intermediate transfer part [[110]] 100. It should be noted that the FIGS. 5A and 5B illustrate an operation of the intermediate transfer belt driven roller 103 during a belt conveyance operation.

Please amend the paragraph at page 18, lines 14-25, in the following manner:

The intermediate transfer belt driven roller 103 is rotatably supported by driven roller bearings 104, and is movable by a predetermined distance due to an external force exerted in an axial direction. Additionally, the driven roller bearing 104 is urged by a spring 105 fixed to a spring support part (structural body) 106 so as to apply a predetermined tension to the intermediate transfer belt 102 due to a driving force generated by the spring 105. Here, clearances [[111]] In and [[114]] In

Tsuneo MAKI et al., S.N. 10/532,852 Page 5 Dkt. 2271/74323

are provided between the intermediate transfer belt driven roller 103 and each of the left and right driven roller bearings 104.

Please amend the paragraph at page 33, line 6, to page 34, line 9, in the following manner:

On the other hand, if the rotational member having a low coefficient of friction is not attached to the intermediate transfer belt drive roller 1001 as shown in FIGS. 8C and 8D, or if [[the]] a taper is not provided on [[the]] a rotational member [[1211]], a corner of the bead 1007 may climb up the side surface of the intermediate transfer belt drive roller 1001 at a bead contact part 1017. If the climbing up state of the corner of the bead 1007 continues, finally, the bead 1007 may override the circumferential surface of the intermediate transfer belt drive roller 1001. In FIGS. 8C and 8D, an arrow 1020 indicates a direction of notation of the intermediate transfer belt drive roller 1001, and an arrow 1019 indicates a direction of conveyance by the intermediate transfer belt 1002. It should be noted that, at an end part of the intermediate transfer belt drive roller 1001 or a part of an inner surface part of the groove (corresponding to the groove 110 shown in FIG. 6) where the intermediate transfer belt 1002 interferes with the bead 1007, the coefficient of friction between the intermediate transfer belt drive roller 1001 and the intermediate transfer belt 1002 is set higher so that the drive force of the intermediate transfer belt drive roller 1001 is surely transmitted to the intermediate transfer belt 1002. Moreover, since the bead 1007 is desired to be made of a flexible material so as to acquire flexibility, a coefficient of friction between the intermediate transfer belt drive roller 1001 and the bead 1007 tends to be high.

Please amend the paragraph at page 36, line 22, to page 38, line 11, in the following manner:

In the intermediate transfer part 100, rotational members 121 each having a tapered comer are attached to both ends of the intermediate transfer belt drive roller

Tsuneo MAK1 et al., S.N. 10/532,852 Page 6 Dkt. 2271/74323

101. The rotational members 121 may interfere with the beads while rotating with the intermediate transfer belt drive roller 101. A coefficient of friction µ1 between the intermediate transfer belt drive roller 101 and the beads 107 and a coefficient of friction µ2 between the rotational members and beads 107 are set to satisfy a relationship $\mu 1>\mu 2$. Additionally, a taper angle of the tapered surface of the rotational member 121 is set to 10 degrees to 45 degrees with respect to a side surface of the bead 107. Further, in order to set the roller diameter ϕ_{23} of the intermediate transfer belt drive roller 101 and the diameter ϕ_{24} of the rotational member 121 approximately equal to each other, a tolerance of the diameter ϕ_{24} is set to \pm 1.0 mm with respect to the diameter ϕ_{24} . It should be noted that it is more preferable that the diameter ϕ_{24} is within a range of -0.01 mm to -0.1 mm with respect to the diameter ϕ_{23} . Moreover, an amount of engagement [[122]] \underline{I}_{22} is set to a predetermined value so that the rotational member 121 and the bead 107 overlap with each other. It should be noted that since the bead 107 is located on an inner side of the intermediate transfer belt 102 and bends by interfering with the intermediate transfer belt drive roller 101 and the intermediate transfer belt driven roller 103, the thickness of the bead 107 must be made small. Therefore, the abovementioned predetermined value is determined so that the thickness of the bead 107 can be set as small as possible while restricting a deflection of the intermediate transfer belt 102 by the rotational member 121 overlapping the bead 107. For example, supposing that the thickness (corresponding to 118) of the bead 107 is T and a difference between the outer diameter of the rotational member 121 and the inner diameter of non-tapered part of the rotational member 121 is 2t, it is made to establish a relationship T>t.

Please amend the paragraph at page 45, line 12, to page 47, line 12, in the following manner:

In the intermediate transfer part 100, as mentioned above, the axis of the intermediate transfer belt driven roller 103 is arranged so as to incline by an angle θ

Tsuneo MAK1 et al., S.N. 10/532,852 Page 7 Dkt. 2271/74323

with respect to the axis of the intermediate transfer belt drive roller 101. When the intermediate transfer belt 102 is circularly driven by the intermediate transfer belt drive roller 101, the intermediate transfer belt 102 gives a force indicated by a vector 129 to the intermediate transfer belt driven roller 103 when it reaches the intermediate transfer belt driven roller 103. At this time, the intermediate transfer belt driven roller 103 is rotating in a direction indicated by a vector 130. There exists a vector angle difference corresponding to the angle 0 between the vector 129 and the vector 130. Moreover, a rotational force of the intermediate transfer belt driven roller 103 is obtained by the circular drive of the intermediate transfer belt 102. The intermediate transfer belt 102 is rotating in a direction of the vector 130 while receiving a force expelling in the vector 129. Furthermore, the drive force which rotates the intermediate transfer belt driven roller 103 is transmitted due to the friction which exists between the intermediate transfer belt 102 and the intermediate transfer belt driven roller 103. Thus, since the axis of the intermediate transfer belt driven roller 103 inclines by the angle θ , the drive force of the intermediate transfer belt drive roller 101 is transmitted to the intermediate transfer belt driven roller 103 at a predetermined transmission efficiency while the intermediate transfer belt 102 slides on the intermediate transfer belt driven roller 103. In other words, the intermediate transfer belt 102 transfers the drive force while urging the intermediate transfer belt driven roller 103 in a direction indicated by an arrow 135 and vector 131. Thus, the thus-transmitted drive force rotates the intermediate transfer belt driven roller 103. On the other hand, the intermediate transfer belt driven roller 103 rotates while urging the intermediate transfer belt 102 in a direction indicated by the vector 132. Here, the intermediate transfer belt 102 receives a force (hereinafter, may be referred to as "deflection force") in a direction indicated by an arrow 133 due to the direction of rotation of the intermediate transfer belt driven roller 103, and the intermediate transfer belt 102 moves in a rightward direction in the figure due to the deflection force. Therefore, the intermediate transfer belt 102 is caused to move in the rightward direction and the intermediate transfer belt driven roller 103 is caused to move in the leftward direction in the figure.